CDF Performance Standards Table

Performance Standard	Normally Feasibility Study Level Issue or Design Issue?
Design – *The CDF shall be designed to:*	
Contain the volume, level, and characteristics of contaminated sediment to be placed within it, using site-specific designs as needed to accommodate the specific contaminated materials proposed for disposal. The CDF shall be designed to achieve these performance standards when filled with the specified design volume of contaminated sediment meeting CDF sediment acceptance criteria that will be established, considering representative sediment contaminant concentrations and contaminant mobility data obtained from, or estimated for, sediments from Portland Harbor sites where dredging is a reasonably anticipated remedial action that would generate sediments requiring confinement.	FS Issue
Minimize physical intrusion into waters of the US.	FS Issue
Minimize water flow into and out of the CDF, including preventing or restricting preferential flow paths of clean or contaminated groundwater into or out of the CDF. The evaluation should include identifying, removing or modifying utilities trenches, storm drain lines, wells, and other conduits within 500 feet of the CDF (or other distance as determined to be appropriate). Utilities, storm drain lines and other conduits are not allowed under or within the contaminated sediment fill prism.	Design Issue
Achieve confinement of all hazardous substances disposed of in the facility through the groundwater pathway so that the CDF does not contribute any long- term discharge and/or release of contaminants above applicable and relevant and appropriate requirements under federal or state law for surface water in the lower Willamette River.	FS Issue
Limit contaminant concentrations in groundwater (including berm pore water) exiting the CDF to levels below EPA's national recommended chronic water quality criteria for both aquatic organisms and fish consumption by humans (17.5 g/day), more stringent Oregon water quality standards, and MCLs without dilution in the water column. This should include dormant periods between CDF filling, and after closure. Analyses for meeting these criteria shall not consider biodegradation of contaminants within the CDF.	FS Issue
CDFs shall be designed in a manner that is consistent with the Remedial Action Objectives and Management Goals that have been established for the Feasibility Study. Habitat mitigation and land acquisition assumptions for individual CDFs shall be developed for cost estimating purposes in the FS.	FS Issue

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CDF Berms shall be designed to: • Provide a static safety factor of 1.5 or greater and a seismic safety factor of 1.1 or greater. The design seismic event shall correspond to a 10 percent probability of exceedance in 50 years. • Be resistant to erosive forces by the largest of 100-year flood flow, 100-year waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area. • Have an appropriate gradation to allow transport of groundwater while retaining (filtering) sediment during filling and after closure.	Design Issue
Construction of any CDF shall not measurably increase the 100-year flooding stage or decrease flood storage of the Willamette River. The FS shall consider cumulative effects of multiple sites and related remedial actions including sediment capping.	Design Issue
Maintain saturated or unsaturated conditions (as appropriate) within the confined contaminated sediments prism, considering reasonably anticipated seasonal and long-term cyclical groundwater levels, and considering site infiltration or zero recharge (as appropriate) from the overlying ground surface, to eliminate or reduce potential mobility of chemicals of concern.	Design Issue
Minimize releases of 303(d) listed contaminants to the extent practicable.	FS Issue
Unless modified by EPA, all CDFs shall be designed to meet these performance standards, ARARs and the final Portland Harbor ROD requirements in perpetuity.	Design Issue
Construction and Filling:	
Construct the CDF berm and related components in a manner that minimizes to the extent practicable water quality exceedances within the construction zone and achieves compliance with water quality criteria/standards at and beyond the specified point of compliance.	FS Issue
Construct the CDF in a manner that minimizes impacts to fisheries and wildlife by removing fish to the extent practicable from the CDF area before and during berm construction.	Design Issue

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Construct the CDF berm with acceptable material. For cost estimating purposes, acceptable material should be based on requirements established in the December 2003 Technical Plans and Specifications (Ecology and the Environment 2003) for the McCormick & Baxter sediment cap located within the Willamette River. Materials will generally be imported clean granular material, but typically all materials shall be free of roots, inappropriate organic material, contaminants, and all other deleterious and objectionable material. However, CDF berm construction material shall have an organic fraction meeting minimum specified values consistent with contaminant transport modeling.	Design Issue
Accept only sediments meeting final sediment acceptance criteria. EPA shall approve all sediment to be disposed of in any CDF.	Design Issue
Plan and manage the CDF filling to avoid any short-term overflow(s), or minimize the overflows to the extent possible. If a CDF overflow during filling cannot be avoided, complete an analysis of overflow discharge rates and duration, contaminant concentrations, and ability to meet water quality criteria at end of pipe. Evaluate BMPs and treatment options needed to meet water quality criteria at the end of the pipe. If EPA agrees that criteria cannot be met at the end of the pipe then a dilution zone modeling analysis of the discharge impacts shall be completed to demonstrate compliance with water quality criteria. Overflows must meet acute water quality criteria. Chronic water criteria will be used to guide implementation of BMPs to minimize contaminant loadings to the river. The design shall consider engineering controls and treatment options needed to meet chronic discharge criteria at end of pipe.	Design Issue
During CDF filling, concentrations in groundwater (berm pore water) exiting the CDF must meet acute water quality criteria. Chronic water criteria will be used to guide implementation of BMPs to minimize contaminant loadings to the river. For the CDF, short-term water quality impacts are defined as the period from the beginning of the fill activity until the water level in the CDF reduces to within 0.1 foot of the water level in the river.	Design Issue
Physically close any hydraulic connection between river and the CDF (except through groundwater) except during periods of actual approved overflow.	FS Issue
Prior to final closure of any CDFs, the facility shall be managed in a manner that minimizes impacts to fisheries and wildlife. Potential and short-term exposures of fish and wildlife to contaminated sediments and/or water within a CDF shall be fully assessed and disclosed.	Design Issue
Cap contaminated sediments with clean soils/sediment, or soils/sediments that meet specific acceptance criteria that are established by EPA.	Design Issue
Stormwater discharges or infiltration of stormwater into the CDF is not allowed.	Design Issue

Performance Standard	Normally Feasibility Study Level Issue or Design Issue?
Long-Term:	
Monitor CDF(s) in perpetuity, or until reduced monitoring is approved by EPA, to document that the CDF(s) achieves confinement of all hazardous substances placed in it so that the facility does not contribute any discharge and/or release of contaminants above performance standards/ROD criteria for surface water or sediment in the lower Willamette River.	FS Issue
Provide appropriate financial assurance for project development, closure, long- term monitoring, mitigation as needed, and contingency actions.	Design Issue
Implement appropriate institutional controls: • Prevent disturbance of the sediment • Prevent stormwater infiltration into the CDF or the CDF buffer zone. • Prevent installation of groundwater extraction wells for any purpose with the CDF or the CDF buffer zone. • Restrict development on the CDF. Structures may be constructed over the CDF; however, foundations must remain at least 3 feet above the upper surface of the contaminated sediment zone. Installation of piles driven through the contaminated sediment zone is not allowed. However, EPA is willing to consider proposals for jet grouted piles or other technologies that will not disturb the contaminated sediments.	Design Issue